REMARKS

Claims 1, 2, 9-11, 14-17, and 20-21 are currently pending. Claims 1, 2, 9-11, and 14-17 are being amended. Claim 3-8, 12, 13, 18, and 19 have been cancelled. Applicant reserves the right to pursue the original claims and other claims in this and other applications.

Claims 1, 2, 11, and 16-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tabata (US 6,088,006) in view of Tatsuzawa (US 6,441,844), and further in view of Aritake et al. (US 5,872,590). This rejection is respectfully traversed.

Claim 1 recites, *inter alia*, a method for displaying stereoscopic images, comprising the steps of: "converting stored model object data of objects, made of polygons having 3D coordinates, to be viewed in a planar view to reference camera coordinate system data with its origin at a reference camera and converting stored model object data of objects, made of polygons having 3D coordinates, to be viewed in a stereoscopic view to parallax camera coordinate system data for right and left eyes respectively with their origins at parallax cameras for right and left eyes having predetermined parallax angles; drawing the reference camera coordinate system data and the parallax camera coordinate system data for right eye as image data for right eye in a video memory; drawing the reference camera coordinate system data and the parallax camera coordinate system for left eye as image data for left eye in the video memory; and synthesizing the image data for right and left eyes drawn in the video memory and displaying, on a stereoscopic display device, images mixing stereoscopic and planar objects."

In order to establish a *prima facie* case of obviousness "the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P.

§2142. None of Tabata, Tatsuzawa, and Aritake et al., even when considered in combination, teach or suggest all limitations of independent claims 1, 11, or 16.

Tabata discloses "...a stereoscopic image generating apparatus comprising storage means for storing three-dimensional shape data of a plurality of objects, initial position data of the plurality of objects in a three-dimensional coordinate system, motion data of the plurality of objects in the three-dimensional coordinate system, and position data of first and second viewpoints in the three-dimensional coordinate system, first rendering means for generating, on the basis of the data stored in the storage means, first two-dimensional image data obtained by rendering the plurality of objects in the three-dimensional coordinate system from the first viewpoint, second rendering means for generating, on the basis of the data stored in the storage means, second two-dimensional image data obtained by rendering the plurality of objects in the three-dimensional coordinate system from the second viewpoint, and two-dimensional image data control means for controlling to translate all two-dimensional image data of at least one of the first and second two-dimensional image data which are obtained by the first and second rendering means for a specific object arbitrarily selected from the plurality of objects, so that a difference between horizontal displacement amounts from the centers of the first and second two-dimensional image data is set substantially constant. " (Tabata, Summary)

Tabata indicates the purpose of its invention as generating a stereoscopic image which can be easily observed by an observer. In Tabata, two-dimensional image data generated respectively from right and left eye view points are shifted in horizontal direction, so that a difference between horizontal displacement amounts from the centers of the two-dimensional image data is set constant. Tabata teaches "stereoscopic image generating apparatus of this embodiment generates left and right images

(pictures) and then shifts them." Col. 9, ln. 58-60. Specifically, Tabata indicates shifting for two-dimensional image is performed after a rendering process.

Tabata fails to disclose "converting stored model object data of objects ... to be viewed in a planar view to reference camera coordinate system data with its origin at a reference camera and converting stored model object data of objects ... to be viewed in a stereoscopic view to parallax camera coordinate system data for right and left eyes..." (emphasis added), thus, the claimed invention creates, by synthesizing the image data for virtual cameras. To the contrary, the right and left images generated by Takada are derived from two sets of image data from two cameras having left and right perspectives, respectively. Thus, the invention of Tabata is different from the claimed invention.

Tatsuzawa discloses "Left and right video cameras ... disposed on both sides of a front video camera.... Solid-pictorial video signals used upon signal transmission are generated by using video signals outputted from the left and right video cameras with respect to a video signal outputted from the front video camera. The left and right video cameras make use of simplified video cameras and are cameras with no zoom functions or the like. The video signals obtained from the left and right video cameras are used as signals for forming a solid picture. In the present example, only solid information with respect to a main picture is transmitted as a video signal to reduce the amount of transmission. A motion-compensated DCT encode process using the front video signal as a reference picture is performed to extract only the video signal having the solid information from the left and right video signals. Since the simplified video cameras can be utilized, solid-pictorial video signals can be generated at low cost. " (Tatsuzawa, Abstract)

Tatsuzawa discloses a video data generating system, in which video data for a stereoscopic view can be generated with low cost. In the system of Tatsuzawa, a front camera, used as reference camera, and simple view cameras to the left and right of the reference camera, are applied on a video signal output from the front camera to generate video signals for stereoscopic view. As simple cameras only produce low quality picture. The system of Tatsuzawa is to be used to display a stereoscopic view of a real space. Tatsuzawa teaches only one object is captured by the reference, left and right cameras.

As such, Tatsuzawa fails to disclose "converting stored model object data of *objects*, made of *polygons* having 3D coordinates, to be viewed in a planar view to reference camera coordinate system data with its origin at a reference camera and converting stored model object data of *objects*, made of *polygons* having 3D coordinates, *to be viewed in a stereoscopic* view to parallax camera coordinate system data for right and left eyes respectively with their origins at parallax cameras for right and left eyes having predetermined parallax angles..." (emphasis) which is different from the methodology taught by Tatsuzawa which only is directed at capturing a single object.

The camera system of Tatsuzawa is also different from the present invention. Tatsuzawa uses three real cameras for the central video camera and the simplified left and right camera to gather images and subsequently display stereographic images. Tatsuzawa fails to disclose using parallax cameras that are virtual and are located at the origins for the left eye and right eye of the parallax camera coordinate system, as Tatsuzawa fails to disclose using "model object data of objects, made of polygons having 3D coordinates" and then "synthesizing the image data for right and left eyes drawn in the video memory and displaying, on a stereoscopic display device, images

mixing stereoscopic and planar objects." Thus the claimed invention creates, by synthesizing, the image date for virtual camera, whereas Tatsuzawa recreates right and left images from two sets of image data from two cameras having left and right perspectives, respectively. Thus the invention of Tatsuzawa is different from the claimed invention and does not cure the deficiencies of Tabata.

Aritake discloses "A position of an observer in a stereoscopic observing region is detected by a position detecting unit. A right-eye image and a left-eye image which are seen from the detecting position are formed by an image forming unit and displayed on a display. By setting an aperture position of a projection optical system, the right-eye image is projected to the right-eye position of the observer and the left-eye image is projected to the left-eye position, thereby allowing a stereoscopic image to be observed. Further, an aperture is set so as to project the right-eye image or left-eye image to a position different from the detecting position of the observer, thereby allowing a same image to be seen to both eyes of another observer and allowing a two-dimensional image to be observed." (Aritake, Abstract)

Furthermore, Aritake teaches a system in which one or more viewers can observe a stereoscopic image as moving, without any supplemental glasses, and viewers other than those observing the stereoscopic image can observe a clear two-dimensional image. Stereoscopic images or two-dimensional images can be observed by viewer, depending on the viewer's position.

Furthermore, the camera system of Aritake is also different from the present invention. Aritake sues two real cameras, the left and right cameras, to capture and then subsequently display stereographic images. Aritake fails to disclose, using parallax cameras that are virtual and are located at the origins for the left eye and right eye of the parallax camera system, as Aritake fails to disclose using "model object data

of objects, made of polygons having 3D coordinates" and then "synthesizing the image data for right and left eyes drawn in the video memory and displaying, on a stereoscopic display device, images mixing stereoscopic and planar objects." Thus the claimed invention creates, by synthesizing, the image date for virtual camera, whereas Aritake recreates right and left images from two sets of image data from two cameras having left and right perspectives, respectively. Thus the invention of Aritake is different from the claimed invention and does not cure the deficiencies of Tabata andTatsuzawa.

Since Tabata, Tatsuzawa and Aritake do not teach or suggest all of the limitations of claim 1, this claim is not rendered obvious over the cited references.

Claims 2 and 3 depend from claim 1 and are allowable for at least the reasons noted above with respect to claim 1.

Claims 11, and 16 have a similar claim limitation as claim 1 and are allowable for at least the reason noted above with respect to claim 1.

Claims 12 and 13; and 17 and 18 depend from claim 11 and 16, respectively, and are allowable for at least the reasons noted above with respect to claims 11 and 16.

Claims 9-10, 14-15, and 20-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tabata in view of Tatsuzawa, and further in view of Aritake and further in view of Hoglin (U.S. Pat. No. 5,949,477)("Hoglin"). This rejection is respectfully traversed.

Claims 9-10 depend from claim 1 and are patentable at least for the reasons mentioned above. Claims 14-15 depend from claim 11 and are patentable at least for

the reasons mentioned above. Claims 20-21 depend from claim 16 and are patentable at least for the reasons mentioned above.

Hoglin discloses "A three-dimensional stereoscopic system using two camera units mounted onto a sub-base and each camera unit mounted onto a moveable base. The bases rotates and are synchronized to turn with each other to control the horizontal viewing angle. Both camera units are synchronized to scan an image source in unison. The video signals from the camera units are loaded into a switching unit which alternatively outputs information from one camera unit and then the other camera unit. In this manner, both a left eye view and a right eye view are transmitted to a television monitor to be viewed as a stereoscopic image." (Hoglin, abstract)

Hoglin fails to address the deficiencies of Tabata, Tatsuzawa, Aritake noted above, that it does not disclose "stored model converting object data of *objects*, made of *polygons* having 3D coordinates, to be viewed in a planar view to reference camera coordinate system data with its origin at a reference camera and converting stored model object data of *objects*, made of *polygons* having 3D coordinates, *to be viewed in a stereoscopic* view to parallax camera coordinate system data for right and left eyes respectively with their origins at parallax cameras for right and left eyes having predetermined parallax angles..."

Furthermore, the camera system of Hoglin is also different from the present invention. Hoglin sues two real cameras, the left and right cameras, to capture and then subsequently display stereographic images. Hoglin fails to disclose, using parallax cameras that are virtual and are located at the origins for the left eye and right eye of the parallax camera system, as Hoglin fails to disclose using "model object data of objects, made of polygons having 3D coordinates" and then "synthesizing the image data for right and left eyes drawn in the video memory and displaying, on a

stereoscopic display device, images mixing stereoscopic and planar objects." Thus the claimed invention creates, by synthesizing, the image date for virtual camera, whereas Hoglin recreates right and left images from two sets of image data from two cameras having left and right perspectives, respectively. Thus the invention of Hoglin is different from the claimed invention and does not cure the deficiencies of Aritake and Tabata and Tatsuzawa.

Applicant respectfully requests that the 35 U.S.C. § 103(a) rejection of claims 9-10, 14-15, and 20-21 be withdrawn and the claims allowed.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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